INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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50X1-HUM

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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

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1. At the end of World War II, US blood-plasma dehydrating equipment was given to Czechoslovakia under UNRRA and was set up in the Medical Research Institute in Prague-Vinohrady, in the new hospital in Hradec Kralove (N 50-13, E 15-50), and in the penicillin factory in Roztoky (N 50-10, E 14-24). After 1948, no more UNRRA equipment of this kind was supplied and Czechoslovakia started her own production. At the request of the Ministry of Health, the task of producing a prototype for the apparatus was entrusted to the Research Institute for Refrigeration in Prague-Smichov[1] and was to be manufactured by the Frigera National Enterprise in Kolin (N 50-02, E 15-12). One original piece of equipment therefore was lent by the Medical Research Institute to the Research Institute for Refrigeration. There it was copied. The first prototype made was absolutely identical to the US model.

2. Difficulties, however, arose with measuring apparatus and mechanical equipment, since these Czechoslovak products were far from the US products in quality. For example, a compressor of the same output (e.g. - 60°C) was about double the size of the US one. An air pump for as low pressure as 14 microns was not available at all and had to be put into production at some factory[2] in Roznov pod Radhostem (N 49-28, E 18-08). Low vacuum gauges likewise were not available and their manufacture was entrusted to the Metra Works at Blansko. Since the system works on a very low vacuum, production procedures were not known and at first this led to a considerable lack of airtightness in the system. The demand was made very suddenly and the plant had to go into production quickly. Because of the shortcomings mentioned above, the completion of the equipment was much delayed and considerable difficulties arose in negotiations with the ministries. Since the apparatus itself was already in existence, production was hampered only by sub-deliveries from the factories mentioned above. The apparatus was eventually handed over to Frigera, Kolin.

3. The equipment is for general use and may be employed by any blood transfusion station or hospital. Research work on blood plasma was carried out in Prague-Vinohrady and production of blood plasma on a large scale was carried out by the penicillin plant at Roztoky. In addition, there are at Roztoky large rotary dehydrating plants for blood. Production is supervised by Dr. Majer (fnu) and Dr. Sterba (fnu).

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Description of the Apparatus [redacted] 50X1-HUM

4. The apparatus for dehydrating blood plasma consists of two airtight drums joined together by a pipe. One single-stage pump is used for the whole plant to pump out both drums to 15 microns on the column of mercury. A single-stage compressor is also used, creating an evaporation temperature of $-60^{\circ}C$. There are instruments for registering on a switchboard pressure and temperature inside the apparatus. Since very low pressures and temperatures are involved, the registering instruments must be very accurate and are very expensive. [redacted] 50X1-HUM

[redacted]

Production Procedure

5. Human blood is left to settle for several hours and the corpuscles separate from the plasma. The separated plasma is then drawn off, filtered, and marked with the blood group from which it came. After filtering, it is poured through calibrated measuring vessels in amounts of 250 ccm. and 300 ccm. and into glass bottles for further processing. The bottles are closed with special rubber stoppers and placed horizontally on a special rotating apparatus in a bath of alcohol at a temperature of $-30^{\circ}C$. The bottle rotates about 10 times per minute and as it rotates the lower part of the bottle is constantly in contact with the frozen bath of alcohol, so that gradually, after about 48 minutes, the whole plasma content is frozen to the inner walls of the bottle. The frozen plasma is then uncorked, put into a metal basket and placed in a sublimating boiler. The boiler is hermetically sealed and refrigeration proceeds by means of a pump. After about 10 minutes, pressure sinks to about 200 microns in the mercury column, and all the registering apparatus is connected. After about an hour, when the position is stable, the sublimating heat is turned on and the process itself is watched by a doctor or a research worker on the registration instruments. It lasts about 23 hours and then the instruments show the end of the process by a sudden drop in temperature. The research worker then stops the apparatus, breaks the vacuum, opens the sublimating boiler and takes out all the containers with the bottles. The bottles are then quickly removed from the containers and corked again. This is done in special rooms under strict hygienic conditions. On completion of the process, the heat is turned on in the condensing drum, the frozen water melts and is driven out by a hand ventilator. At the end of the process, the apparatus can be used again immediately.

1. [redacted] Comment: This institute [redacted] 50X1-HUM
[redacted] present name State Research Institute for Refrigerating and Food Industry Appliances. 50X1-HUM

2. [redacted] Comment: [redacted] this 50X1-HUM
is probably the Tesla-Roznov National Enterprise , Plant 01, at Roznov pod Radhostem. 50X1-HUM

[redacted] Attachment (1 diagram, 1 page of legend): 50X1-HUM

[redacted]

KEY to sketch:

1. Brass cylindrical condensing drum, 400 mm in diameter, 900 mm high, walls about 2½ mm thick, painted on the outside with airtight lacquer (composition not known).

2. Cylindrical sublimating boiler, dimensions the same as (1), with removable lid. There are four basket containers inside this boiler, each for six bottles, containing 400 ccm, and 75% filled with filtered blood plasma. When the plasma has been frozen to the inside walls of the bottles, these are put into special baskets and placed in the sublimating boiler which is closed hermetically with a strong lid, attached by about 8 wing nuts.

3. Pipe, connecting the two drums, 90 mm in diameter, brass, wall 2.5 mm thick. It is welded with silver solder.

4. Spiral evaporator, acting as a condensing tube for steam sublimated from the plasma.

5. Automatic thermostatic expansion valve, SAUTER type, 1.5 mm.

6. Single-stage compressor, FRIGERA, 4,500 Ccal/per hour, evaporating temperature -10°C.

7. Water-cooled condenser, reverse-current.

8. Electro-motor, driving the compressor, 350 Watt.

9. Single-stage rotary pump, of American origin. Certain spare parts were requested for mass production of the STRUMIA apparatus, and among these was the pump. For the prototype the original American pump was used since there was no identical Czech product.

10. Temperature regulator, insulated.

11. Metal plate for alcohol bath, where the glass bottles containing blood plasma are frozen on rotating apparatus.

12. Switchboard, with switches and registering instruments.

13. 4 Baskets for bottles, consisting of a round metal belt in sections, the walls about 1 mm thick. On the inside there are spiral spring holding-devices for 6 glass bottles.

14. Electric heating elements, about 100 Watts for supplying the necessary sublimating heat for the operation.

15. Electric heating element, about 400 Watts. When the operation is completed, this element is switched on to melt the ice on the condensing tube.

16. Hand-operated vaccum valve. During operation this valve is firmly closed and is used to let out the water melted off the condensing tube.

17. Holder for thermometer, showing the temperature of the spiral evaporator.

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Blood Plasma Dehydrating Equipment